CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 77-117

WASTE DISCHARGE REQUIREMENTS FOR:

SOLANO GARBAGE COMPANY
CLASS II-2 SOLID WASTE
DISPOSAL SITE, FAIRFIELD,
SOLANO COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board) finds that:

1. Solano Garbage Company, hereinafter called the discharger, submitted a Report of Waste Discharge for its solid waste disposal site dated March 5, 1975. In addition a report, "Geotechnical Report and Design Studies," dated December 24, 1975, has been submitted for the disposal site.

2. The discharger currently disposes of Group 2 and Group 3 wastes at a site which it owns. The disposal site is located four miles southeast of the City of Fairfield, Solano County, as shown in Attachment A, which is incorporated herein and made part of this Order.

3. The disposal site consists of a 70 acre parcel located in a low-lying area adjacent to Union Creek and Hill Slough on the northeast edge of Suisun Marsh. Approximately two-thirds of the site has been used for solid waste disposal operations since 1956. At present, the disposal site is divided into two operating areas designated as Phase 1 and Phase 2 as shown in Attachment A. The Phase 1 area encompasses the existing disposal area which consists of approximately 40 acres and has a life capacity of about eight years. The Phase 2 area covers about 26 acres which will be utilized upon completion of Phase 1 and has a life capacity of about three years.

4. The site is underlain by a considerable thickness of impermeable alluvial clays with interbedded layers of clayey sand, clayey gravel, and silt. The Green Valley-Antioch fault lies 10 miles east of the site. Useable groundwaters beneath the site are protected by impervious stiff clay strata which serve as an effective aquiclude. The isolated clayey sand and gravel beds underlying the site at relatively shallow depths are discontinuous and contain small quantities of unusable brackish water.

5. Subsequent to the modifications necessary to comply with this Order, this disposal site will meet the criteria contained in the California Administrative Code, Title 23, Chapter 3, Subchapter 15, for classification of a portion of the site as a Class II-2 disposal site to receive Group 2 and 3 wastes.

6. The beneficial uses of Union Creek and Hill Slough are:

   a. Recreation
   b. Fish migration and habitat
   c. Habitat and resting for waterfowl and migratory birds
   d. Esthetic enjoyment

7. The land within 1000 feet of the site is used for agriculture and general open space.

8. The Board adopted a Water Quality Control Plan for the San Francisco Bay Basin in April 1975 and this Order implements the water quality objectives stated in that plan.

9. The Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

10. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

11. This project involves the continued operation of a privately owned Class II-2 facility with minor alteration to the land. Consequently, this project will not have a significant effect on the environment based upon the exemption provided in Section 15101, Title 14, California Administrative Code.

IT IS HEREBY ORDERED, that Solano Garbage Company and any other persons that shall own the land or operate this landfill shall comply with the following:

A. Waste Disposal Specifications

1. The disposal of wastes shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

2. Group 2 wastes shall not be placed in or allowed to contact ponded water from any source whatsoever.

3. Wastes shall not be disposed of at any position where they can be carried from the disposal site and discharged into waters of the State.

4. Group 1 wastes and hazardous wastes shall not be deposited or stored at this site.

5. Sewage sludge or liquid wastes shall not be discharged with Group 2 and 3 wastes, unless approved in writing by the Executive Officer of this Board.

6. The discharger shall remove and relocate any wastes which are discharged at this site in violations of these requirements.

B. Leachate and Drainage Specifications

1. Leachate from Group 2 wastes and ponded water containing leachate or in contact with refuse shall not be discharged to waters of the State.

2. Water used during disposal site operation shall be limited to a minimal amount reasonably necessary for dust control and fire suppression.

3. The disposal area shall be protected from any washout or erosion of wastes or covering material, and from inundation, which could occur as a result of floods having a predicted frequency of one in 100 years.

4. Vertical and lateral hydraulic continuity with surface and groundwaters shall be prevented by the presence of a natural clay barrier of at least five feet in thickness and a permeability of 1×10^{-6} cm/sec or less on the bottom and sides of disposal areas. If such a natural condition does not exist, an artificial barrier shall be constructed to meet the above specification.

5. Surface drainage from tributary areas, and internal site drainage from surface or subsurface sources shall not contact or percolate through Group 2 wastes during disposal operation and for the active life of the site.

6. The migration of methane gas from Group 2 waste shall be controlled as necessary to prevent creation of a nuisance.

C. Provisions

1. The discharger shall comply with all sections of this Order except B.3 immediately upon adoption. The discharger shall comply with specification B.3 according to the following time schedule:

Task	Completion Date	Report of Compliance Due
Determine status of compliance	-	November 1, 1977
If compliance is not achieved:		
Submit conceptual plan and time schedule	-	February 1, 1978
Progress report	-	May 1, 1978
Full compliance	October 1, 1978	October 15, 1978

2. Disposal of group 2 and 3 wastes shall not commence on Phase 2 area as shown in Attachment A until the Executive Officer agrees in writing that the measures necessary to comply with the waste discharge requirements have been taken. No less than 60 days prior to proposed use of the Phase 2 area, the discharger shall submit to the Board's Executive Officer for approval, plans and specifications describing the site preparation, construction, and filling procedures including sequences of filling. Sufficient exploratory evidence from borings or approved geophysical techniques shall be submitted to demonstrate compliance with applicable sections of this Order.

3. No later than December 15, 1977, the discharger shall submit to the Regional Board a site operation manual. The manual shall include site management, construction, and maintenance of access roads and perimeter ditches, methods for deposition, compaction and covering of wastes, site maintenance, and other operational procedures. The manual shall include a clear commitment by the operator to adhere to its provisions.

4. The discharger shall maintain a copy of the Order at the site so as to be available at all times to site operating personnel.

5. One hundred and eighty (180) days prior to discontinuing use of any major phase of this site for waste disposal, the discharger shall submit a technical report to the Board describing the methods and controls used to assure protection of the quality of surface and groundwaters of the area during final operations and during any subsequent use of the land. This report shall be prepared by or under the supervision of a registered engineer or a certified engineering geologist. The method used to close the site and maintain protection of the quality of the surface and groundwaters shall comply with waste discharge requirements established by the Regional Board.

6. This Board considers the property owner to have a continuing responsibility for correcting any problems which may arise in the future as a result of this waste discharge or water applied to this property during subsequent use of the land for other purposes.

7. The discharger shall file with the Board technical reports on self-monitoring work performed according to the detailed specifications contained in any Monitoring and Reporting Program which may be directed by the Executive Officer.

8. The discharger shall permit the Regional Board:

   (a) Entry upon premises on which waste are located on in which any required records are kept,

   (b) Access to copy any records required to be kept under terms and conditions of this Order,

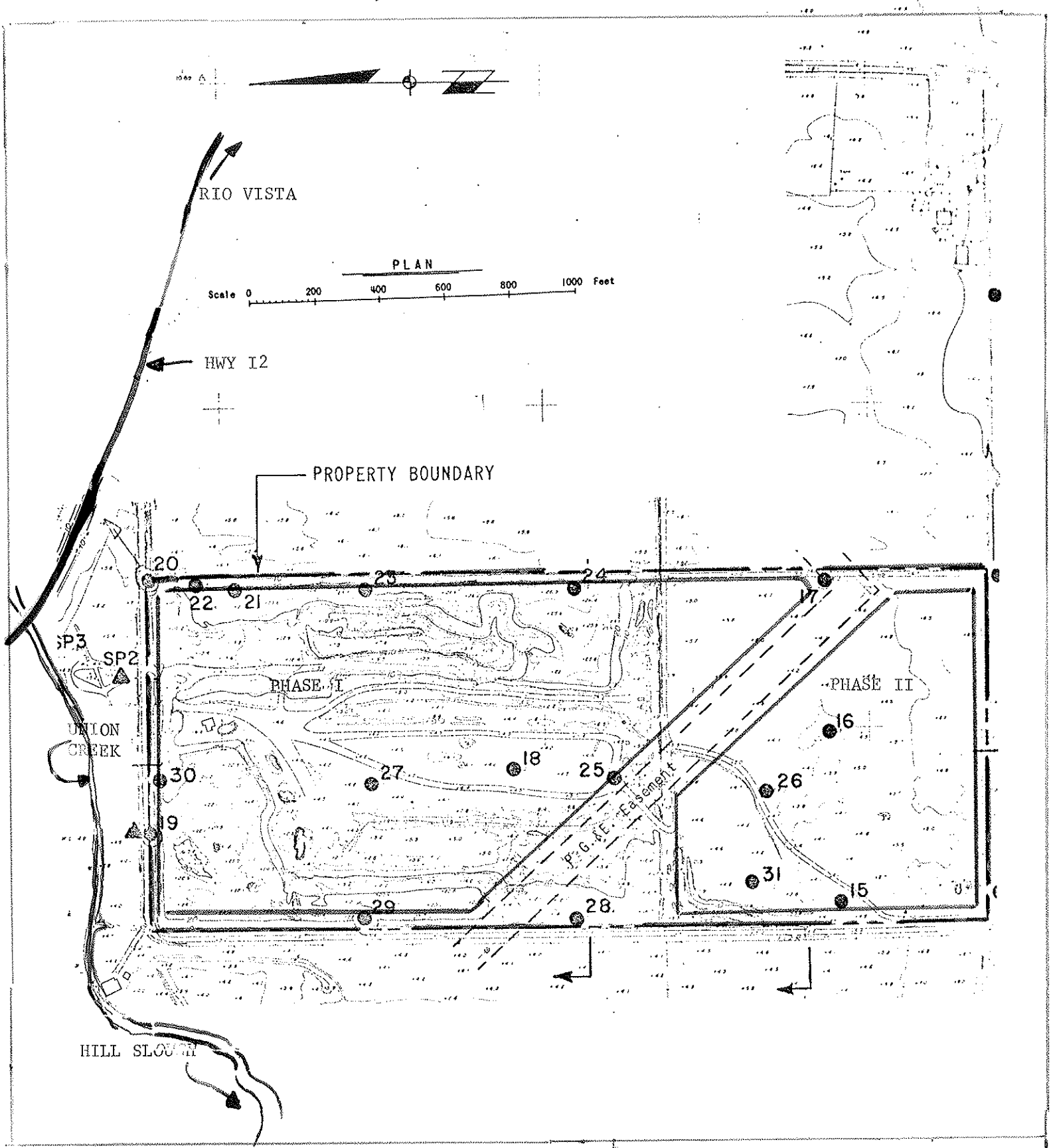
   (c) Inspection of monitoring equipment or records, and

   (d) Sampling of any discharge.

I, Fred H. Dierker, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on September 20, 1977.

FRED H. DIERKER
Executive Officer

Attachments:
A - Map
Self-Monitoring Program



STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SOLANO GARBAGE CO.
PHASE I AND PHASE II AREAS

ATTACHMENT "A" ORDER NO.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM
FOR

SOLANO GARBAGE COMPANY - CLASS II-2

SOLID WASTE DISPOSAL SITE, FAIRFIELD

SOLANO COUNTY

ORDER NO. 77-117

CONSISTS OF

PART A

AND

PART B

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR
SOLANO GARBAGE COMPANY-CLASS II-2
SOLID WASTE DISPOSAL SITE, FAIRFIELD,
SOLANO COUNTY

PART A

A. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13268, 13383, and 13387(b) of the California Water Code and this Regional Board's Resolution No. 73-16.

The principal purposes of a monitoring program by a waste discharger, also referred to as self-monitoring program, are: (1) to document compliance with waste discharge requirements and prohibitions established by this Regional Board, (2) to facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge, (3) to develop or assist in the development of effluent or other limitations, discharge prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards, and (4) to prepare water and wastewater qualilty inventories.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the latest edition of Standard Methods for the Examination of Water and Wastewater prepared and published jointly by the American Public Health Association, American Water Works Association, and Water Pollution Control Federation, or other methods approved and specified by the Executive Officer of this Regional Board, including the methods specified in attached APPENDIX E.

Water and waste analyses shall be performed by a laboratory approved for these analyses by the State Department of Health or a laboratory approved by the Executive Officer. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his laboratory and shall sign all reports of such work submitted to the Regional Board.

All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

C. DEFINITION OF TERMS

1. Grab sample means a sample collected at any time.

2. Standard Observations

a. Receiving Water of Union Creek and Periphery of Disposal Facilities

(1) Discoloration and turbidity: description of color, source, and size of affected area.

(2) Odor: presence or absence, characterization, source, and distance of travel.

(3) Evidence of beneficial water use: presence of water-associated wildlife, fishermen, and other recreational activities in the vicinity of the sampling stations.

(4) Hydrographic condition:

(a) Water and sampling depths.

(5) Weather condition:

(a) Wind - direction and estimated velocity.
(b) Precipitation - total precipitation during the previous five days and on the day of observation.

b. Land Retention or Disposal Area

This applies both to liquid and solid wastes confined or unconfined.

(1) Determine height of the freeboard at lowest point of dikes confining liquid wastes.

(2) Evidence of leaching liquid from area of confinement and estimated size of affected area. (Show affected area on a sketch.)

(3) Odor: presence or absence, characterization, source, and distance of travel.

(4) Estimated number of waterfowl and other water-associated birds in the disposal area and vicinity.

D. SCHEDULE OF SAMPLING, ANALYSES, AND OBSERVATIONS

The discharger is required to perform observations, sampling, and analyses according to the schedule in Part B with the following conditions:

E. RECORDS TO BE MAINTAINED

1. Written records shall be maintained at the landfill site or office and shall be retained for a minimum of 3 years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Regional Board. Such records shall show the following for each sample:

a. Identity of sampling and observation stations by number.

b. Date and time of sampling and/or observations.

c. Date and time that analyses are started and completed, and name of personnel performing the analyses.

d. Complete procedure used, including method of preserving sample and identity and volumes of reagents used. A reference to specific section of Standard Methods is satisfactory.

e. Calculations of results.

f. Results of analyses and/or observations.

F. REPORTS TO BE FILED WITH THE REGIONAL BOARD

1. Written reports shall be filed for each calendar month (unless specified otherwise in Part B) by the fifteenth day of the following month. In addition, an annual report shall be filed as indicated in F-1-f. The reports shall be comprised of the following:

a. Letter of Transmittal:

A letter transmitting self-monitoring reports should accompany each report. Such a letter shall include a discussion of requirement violations found during the past month and actions taken or planned for correcting violations, such as plant operation modifications and/or plant facilities expansion. If the discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to the correspondence transmitting such schedule will be satisfactory. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true and correct.

Monitoring reports shall be signed as follows:

(1) In the case of corporations, by a principal executive officer at the level of vice-president or his duly authorized representative if such representative is responsible for the overall operation of the facility from which the discharge originates,

(2) In the case of a partnership, by a general partner, or

(3) In the case of a sole proprietorship, by the proprietor,

(4) In the case of a municipal, State, or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.

b. Compliance Evaluation Summary

Each report shall be accompanied by a compliance evaluation summary sheet prepared by the discharger. The report format will be specified by the Regional Board.

c. Map or Aerial Photograph

A map or aerial photograph shall accompany the report showing sampling and observation station locations.

d. Results of Analyses and Observations

Tabulations of the results from each required analysis specified in Part B by date, time, type of sample, and station, signed by the laboratory director. The report format will be specified by the Regional Board.

e. List of Approved Analyses

(1) Listing of analyses for which the discharger is approved by the State Department of Health.

(2) List of analyses performed for the discharger by another approved laboratory (and copies of reports signed by the laboratory director of that laboratory shall also be submitted as part of the report).

f. Annual Reporting

By September 30, of each year, the discharger shall submit an annual report to the Regional Board covering the previous calendar year. The report shall contain:

1. Tabular and graphical summaries of the monitoring data obtained during the previous year.

2. Comprehensive discussion of the compliance record and the corrective actions taken or planned which may be needed to bring the discharger into full compliance with the waste discharge requirements.

3. A map showing the area in which filling has been completed during prior calendar year.

4. Summary of the groundwater analyses indicating any change in the quality of the groundwater.

PART B

I. DESCRIPTION OF SAMPLING STATIONS & SCHEDULE OF SAMPLING, ANALYSES & OBSERVATIONS

A. WASTE MONITORING

1. Monthly, record the total volume and weight of a refuse (in cubic yards and tons) deposited on the site during the month, and the daily average. Report Quarterly.

2. Monthly, record the volume of fill completed, in place of cubic yards, showing the location(s) and dimensions on a sketch or a map. Report Quarterly.

(The report record shall be maintained at the landfill office. Weight of the refuse shall be estimated and reported Quarterly.)

B. ON SITE OBSERVATION

Station	Description
S-1 thru S-'n'	Observation stations located on presently active area or completed portion of the site at grid squares delineated by 500 foot grid network.

Station	Frequency of Observation	Observations
All S Stations in active disposal areas	Weekly throughout the year Report quarterly	1. Evidence of ponded water at any point on the disposal site. 2. Evidence of refuse not confined within a cell or parcel. 3. Evidence of "day-lighted" refuse. 4. Evidence of waste in contact with pools of surface water. 5. Evidence of odors presence or absence, the characteristics, intensity, source, distance of travel. 6. Evidence of leachate or water entering or leaving the disposal site, and estimated size of affected area.

C. SEEPAGE AND/OR LEACHATE MONITORING

Station	Description
L-1 thru L-'n'	Each discharge point from the disposal area. Include map indicating locations of discharge(s)

Station	Type of Sample and Frequency	Analyses	Units
All L Stations	Grab sample daily, during each discharge or occurrance.	COD	mg/l
		Dissolved sulfide	mg/l
		Odors	description
		Color	description
		pH	electrometric units
		Total dissolved solids	mg/l

A report shall be made by telephone of any seepage or leachate leaving the property immediately after occurrance. A written report shall be filed with this Board within 5 days and shall contain the following information: 1)Map showing location(s) of discharge 2)flow rate 3)nature of effect (i.e. discoloration of receiving water, size of affected area), and 4)corrective measures undertaken.

D. GROUNDWATER MONITORING

Station	Description
G-1	A groundwater monitoring well located 250 feet south of the northwest corner of the property along the westerly perimeter. The depth shall be as deep as necessary to determine minimum level of subsurface water nearest to the ground surface. The well shall be perforated and have a minimum diameter of four (4) inches.
G-2	A groundwater monitoring well located at the existing boring No. 19 described in the geotechnical report.
G-3	A ground monitoring well located at the existing boring No. 20 described in the geotechnical report.
G-4	A groundwater monitoring well located 750 feet south of northeast corner of the property along the easterly perimeter. The depth shall be as deep as necessary to determine minimum level of subsurface water nearest to the ground surface. The well shall be perforated and have a minimum diameter of four (4) inches.

G-5 A groundwater monitoring well located 1500 feet south of northeast corner of the property along the easterly perimeter. The depth shall be as deep as subsurface water nearest to the groundsurface. The well shall be perforated and have a minimum diameter of four (4) inches.

A well log shall be submitted for each sampling well established per this monitoring program.

E. TYPE OF SAMPLE AND FREQUENCY OF ANALYSES

Station	Type of Sample and Frequency	Analyses	Unit
All "G" Stations	Grab sample Quarterly throughout the year. Report quarterly	Water level	feet (MSL datum)
		Color	visual
		Chloride	mg/l
		Total dissolved Solids (TDS)	mg/l
		Free CO_2	mg/l
		pH	Electrometric units
		Electrical conductivity	micromhos/cm
		COD	mg/l
		Nitrate Nitrogen (as N)	mg/l
		Total Kjeldahl Nitrogen (as N)	mg/l

All "G" stations shall be reviewed after one year of analyses. Prior to taking grab samples of the "G" wells, the wells water must be pumped a minimum of two minutes.

F. MISCELLANEOUS REPORTING

1. Prior to the placement of waste material in the new areas (Phase 1 or 2) the discharger shall submit documentation of the presence of a material clay barrier of at least five feet in thickness as described under item of Order No. on the bottom of each disposal area. The documentation must be certified by a registered civil engineer or a certified engineering geologist.

2. Submit documentation of all actions taken or planned to control the migration of methane gas from Group II waste necessary to prevent creation of a nuisance by February 1, 1978.

I, Fred H. Dierker, Executive Officer, do hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in the Regional Board Order No. 77-117.

2. Has been ordered in writing by the Executive Officer on September 20, 1977 and becomes effective

3. May be reviewed at any time subsequent to the effective date upon written notice from either the Executive Officer or the discharger, and will be revised upon written agreement of the Executive Officer and the discharger.

FRED H. DIERKER
Executive Officer

Attachment:
APPENDIX E

Sample collection, storage, and analyses shall be performed according to the latest edition of Standard Methods for the Examination of Water and Wastewater prepared and published jointly by the American Public Health Association, American Water Works Association, and Water Pollution Control Federation, or other methods approved and specified by the Executive Officer of this Regional Board.

Water and waste analyses shall be performed by a laboratory approved for these analyses by the State Department of Health or a laboratory approved by the Executive Officer. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his laboratory and shall sign all reports of such work submitted to the Regional Board.

Federal regulations were published (Table I, 40 CFR136, October 16, 1973) governing the methods that are to be used in analyzing wastes for pollutants. Dischargers are required to use Standard Methods for all parameters for which EPA and State Department of Health approves Standard Methods. Table II lists those constituents for which a test in Standard Methods was not deemed acceptable and lists the method and reference that is considered acceptable.

If a discharger wishes to use an alternate method to Standard Methods which is approved by EPA, this request may be approved by the Executive Officer.

Under certain circumstances other methods will be approved by EPA on a case-by-case basis and upon request by the discharger.

Such a request may be made by letter until printed application forms are made available. The letter or application should contain the following information:

1. The name and address of the responsible person or firm making the discharge (if not the applicant), the permit number, the issuing agency, and the discharge serial number;

2. Identify the pollutant or parameter for which approval of an alternate testing procedure is being requested;

3. Justification for using testing procedures other than those specified;

4. A detailed description of the proposed alternate test procedure, together with references to published studies of the applicability of the alternate test procedure to the effluents in question.

The regional board executive officer should forward the application letter to the State Board. The application will then be transmitted to the Department of Health with a request for comments and recommendations.

termined by one of the standard analytical methods cited and described in Table I, or under certain circumstances by other methods that may be more advantageous to use when such other methods have been previously approved by the Regional Administrator of the Region in which the discharge will occur, and providing that the Director of the State in which such discharge will occur does not object to the use of such alternate test procedures.

Under certain circumstances the Regional Administrator or the Director in the Region or State where the discharge will occur may determine for a particular discharge that additional parameters or pollutants must be reported. Under such circumstances, additional test procedures for analysis of pollutants may be specified by the Regional Administrator or Director upon the recommendation of the Director of the Methods Development and Quality Assurance Research Laboratory.

TABLE I—LIST OF APPROVED TEST PROCEDURES

Parameter and units	Method	References		
		Standard methods	ASTM	EPA methods
General analytical methods:				
1. Alkalinity as $CaCO_3$ mg $CaCO_3$/liter.	Titration: electrometric, manual or automated method—methyl orange.	p. 370	p. 148	p. 6. p. 8.
2. B.O.D. five day mg/liter.	Modified winkler or probe method	p. 489		
3. Chemical oxygen demand (C.O.D.) mg/liter.	Dichromate reflux	p. 495	p. 219	p. 17.
4. Total solids mg/liter	Gravimetric 103–105° C	p. 535		p. 280.
5. Total dissolved (filterable) solids mg/liter.	Glass fiber filtration 180° C			p. 275.
6. Total suspended (nonfilterable) solids mg/liter.	Glass fiber filtration 103–105° C	p. 537		p. 278.
7. Total volatile solids mg/liter.	Gravimetric 550° C	p. 536		p. 282.
8. Ammonia (as N) mg/liter.	Distillation—nesslerization or titration automated phenolate.			p. 134. p. 141.
9. Kjeldahl nitrogen (as N) mg/liter.	Digestion + distillation—nesslerization or titration automated digestion phenolate.	p. 469		p. 149. p. 157.
10. Nitrate (as N) mg/liter.	Cadmium reduction; brucine sulfate; automated cadmium or hydrazine reduction.	p. 458 p. 491	p. 124	p. 170. p. 175. p. 185.
11. Total phosphorus (as P) mg/liter.	Persulfate digestion and single reagent (ascorbic acid), or manual digestion, and automated single reagent or stannous chloride.	p. 526 p. 532	p. 42	p. 235. p. 246. p. 259.
12. Acidity mg $CaCO_3$/liter	Electrometric end point or phenolpthalein end point.		p. 148	
13. Total organic carbon (TOC) mg/liter.	Combustion—infrared method [1]	p. 257	p. 702	p. 221.
14. Hardness—total mg $CaCO_3$/liter.	EDTA titration; automated colorimetric atomic absorption.	p. 170	p. 170	p. 76. p. 78.
15. Nitrite (as N) mg/liter.	Manual or automated colorimetric diazotization.			p. 185. p. 195.
Analytical methods for trace metals.				
16. Aluminum—total [2] mg/liter.	Atomic absorption	p. 210		p. 98.
17. Antimony—total [2] mg/liter.	Atomic absorption [4]			
18. Arsenic—total mg/liter.	Digestion plus silver diethyldithiocarbamate; atomic absorption.[3]	p. 65 p. 62		p. 18.
19. Barium—total [2] mg/liter.	Atomic absorption [4]	p. 210		
20. Beryllium—total [2] mg/liter.	Aluminon; atomic absorption	p. 67 p. 210		
21. Boron—total mg/liter	Curcumin	p. 60		
22. Cadmium—total [2] mg/liter.	Atomic absorption; colorimetric	p. 216 p. 422	p. 692	p. 101.
23. Calcium—total [2] mg/liter.	EDTA titration; atomic absorption	p. 84	p. 692	p. 102.
24. Chromium VI mg/liter.	Extraction and atomic absorption; colorimetric.	p. 420		p. 94.
25. Chromium—total [2] mg/liter.	Atomic absorption; colorimetric	p. 210 p. 426	p. 692	p. 104.
26. Cobalt—total [2] mg/liter.	Atomic absorption [4]			
27. Copper—total [2] mg/liter.	Atomic absorption; colorimetric	p. 210 p. 430	p. 692 p. 410	p. 106.
28. Iron—total [2] mg/liter	do	p. 210 p. 433	p. 692 p. 152	p. 108.
29. Lead—total [2] mg/liter	do	p. 210 p. 438	p. 692	p. 110.
30. Magnesium—total [2] mg/liter.	Atomic absorption; Gravimetric	p. 210 p. 435 p. 291	p. 692	p. 112.
31. Manganese—total [2] mg/liter.	Atomic absorption	p. 210	p. 692	p. 114.
32. Mercury—total mg/liter.	Flameless atomic absorption [5]			
33. Molybdenum—total [2] mg/liter.	Atomic absorption [4]			
34. Nickel—total [2] mg/liter.	Atomic absorption; colorimetric [4]	p. 443	p. 692	
35. Potassium—total [2] mg/liter.	Atomic absorption; colorimetric; flame photometric.	p. 283 p. 285	p. 326	p. 115.
36. Selenium—total mg/liter.	Atomic absorption [4]			
37. Silver—total [2]	Atomic absorption [4]	p. 210		
38. Sodium—total [2] mg/liter.	Flame photometric; atomic absorption	p. 317	p. 326	p. 118.
39. Thallium—total [2] mg/liter.	Atomic absorption [4]			
40. Tin—total [2] mg/liter	do			
41. Titanium—total mg/liter.	do			
42. Vanadium—total [2] mg/liter.	Atomic Absorption; [4] Colorimetric	p. 167		
43. Zinc—total [2] mg/liter	Atomic Absorption; Colorimetric	p. 210 p. 444	p. 692	p. 120.
Analytical methods for nutrients, anions, and organics:				
44. Organic nitrogen (as N) mg/liter.	Kjeldahl nitrogen minus ammonia nitrogen.	p. 498		p. 140.
45. Ortho-phosphate (as P) mg/liter.	Direct single reagent; automated single reagent or stannous chloride.	p. 532	p. 42	p. 235. p. 246. p. 259.
46. Sulfate (as SO_4) mg/liter.	Gravimetric; turbidimetric; automated colorimetric—barium chloranilate.	p. 331 p. 334	p. 51 p. 82	p. 256. p. 268.
47. Sulfide (as S) mg/liter.	Titrimetric—iodine	p. 551		p. 264.
48. Sulfite (as SO_3) mg/liter.	Titrimetric; iodide-iodate	p. 337	p. 261	
49. Bromide mg/liter	do		p. 216	
50. Chloride mg/liter	Silver nitrate; mercuric nitrate; automated colorimetric-ferricyanide.	p. 96 p. 97	p. 23 p. 21	p. 26. p. 31.
51. Cyanide—total mg/liter.	Distillation—silver nitrate titration or pyridine pyrazolone colorimetric.	p. 307	p. 555	p. 41.
52. Fluoride mg/liter	Distillation—SPADNS	p. 171 p. 174	p. 191	p. 64.
53. Chlorine—total residual mg/liter.	Colorimetric; amperometric titration	p. 382	p. 223	
54. Oil and grease mg/liter.	Liquid-liquid extraction with trichlorotrifluoroethane.	p. 254		
55. Phenols mg/liter	Colorimetric, 4 AAP	p. 562	p. 415	p. 282.
56. Surfactants mg/liter	Methylene blue colorimetric	p. 339	p. 619	p. 131.
57. Alkoxides mg/liter	Gas chromatography [6]			
58. Isocyanate mg/liter	Diazotization—colorimetric [7]			
59. Chlorinated organic compounds (except pesticides) mg/liter.	Gas chromatography [6]			
60. Pesticides mg/liter	Gas chromatography [6]			
Analytical methods for physical and biological parameters:				
61. Color platinum-cobalt units or dominant wavelength, hue, luminance, purity.	Colorimetric; spectrophotometric	p. 150 p. 392		p. 38.
62. Specific conductance micromhos at 25° C.	Wheatstone bridge	p. 323	p. 163	p. 284.
63. Turbidity jackson units.	Turbidimeter	p. 350	p. 467	p. 308.

See Note at end of Table I

TABLE II

METHODS TO USE IN PREFERENCE TO
"STANDARD METHODS"

Constituent	Units	Method	Reference
Total dissolved solids (filterable)	mg/l	Glass fiber filtration-180°C	EPA Methods[1/] - p. 275
Ammonia	mg N/l	Distillation-nesslerization or titration automated phenolate	EPA Methods - p. 134
Acidity	mg $CaCO_3$/l	Electrometric endpoint or phenolphtalein end point	ASTM[2/] - p. 148
Nitrite	mg N/l	Manual or automated colorimetric diazotization	EPA Methods - p. 185 p. 195
Antimony - total[6/]	mg/l	Atomic absorption	3/
Cobalt - total	mg/l	" "	ASTM - p. 692
Molybdenum - total	mg/l	" "	3/
Selenium - total	mg/l	" "	3/
Thallium - total	mg/l	" "	3/
Tin	mg/l	" "	3/
Titanium	mg/l	" "	3/

certain that the sample does not boil. Cool the beaker and add another 3 ml portion of distilled concentrated HNO_3. Cover the beaker with a watch glass and return to the hotplate. Increase the temperature of the hotplate so that a gentle reflux action occurs. Continue heating, adding additional acid as necessary until the digestion is complete generally indicated by a light colored residue. Add (1:1 with distilled water) distilled concentrated HCl in an amount sufficient to dissolve the residue upon warming. Wash down the beaker walls and the watch glass with distilled water and filter the sample to remove silicates and other insoluble material that could clog the atomizer. Adjust the volume to some predetermined value based on the expected metal concentrations. The sample is now ready for analysis. Concentrations so determined shall be reported as "total".